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Remarks on the Solution of Prob. 352 by the Editor.—Though the solution of this problem presents no difficulty yet our contributors obtain different results. This discrepancy results, however, from the different assumptions of the manner in which the chords would be drawn.

If it were required to draw all possible chords perpendicular to a given diameter, then, it seems clear to me, the number would be proportional to the *diameter* of the circle; again, if random chords are drawn through a point within a given circle, the rays would evidently be equally dense on the circumference of a circle described about that point as a center; but because, in a given circle, if any one point of the circumference be joined to every other point, by straight lines, no two of these lines will have the same length, and yet some one of them will represent, both in length and direction, every chord that can be drawn in that circle, either through a point or perpendicular to a diameter. I hold, therefore, that when chords of a circle are compared, without reference to any line or point within or without the circle, these lines only should be considered the extremities of which are equidistant on the circumference of the given circle.

Since the note at p. 135 was written, a solution of this problem, by Mr. H. Heaton, has been received which differs from both the other solutions referred to. Mr. Heaton infers from the statement that the chords are of "unknown lengths" that all lengths, from 0 to $2r$ should be regarded as equally probable; whence he obtains $1-(2\div\pi)$ for the required chance.

The answers received are therefore as follows:—

By Mr. Adcock, the required chance $= \frac{1}{4}\pi$.
By Mr. Seitz, " " " $= 2\div\pi$.
By Mr. Heaton, " " " $= 1-2\div\pi$.

The solution, by Mr. Adcock's method may be presented as follows:

With the center at C, describe the given circle AC. Draw any chord as EF, at right angles to the diameter AB, intersecting AB in D, and with CD as radius describe a circle concentric with the given circle.

The chord EF may be denoted by $2\sin\varphi$, and if tangents be drawn at all points of the circumf. of the concentric circle and terminate in the circumf. of the given circle, they will represent all the *equal* chords that can be drawn for any assumed value of φ, and the total number for each value of φ will be 2π, while the number that intersect, for each value of φ, will be 4φ.

Hence, summing for all values of φ from 0 to $\frac{1}{2}\pi$, we get

$$\int_0^{\frac{1}{2}\pi}\frac{4\varphi d\varphi}{2\pi}=\frac{2}{\pi}\int_0^{\frac{1}{2}\pi}\varphi d\varphi = \tfrac{1}{4}\pi.$$